1876

F. L. & D. R. CARNELL,

IRON FOUNDERS and MACHINISTS

AND MANUFACTURERS OF

BRICK MACHINERY,

No. 1844 Germantown Ave.

PHILADELPHIA, PA.

Lonabaugh & Son, Printers, 2044 Germantown Avenue.

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API INTERNATIONAL

CCA

Oldest and Largest Establishment of the kind in the United States.

Cohocksink Brick Machine Works.

MANUFACTURERS OF

Steam Engines, Brick Machines, Brick Presses, Clay Wheels, Pipe Machines, Tile Machines, Grinding Pans, Rollers, Stampers and Brick Makers' Tools of every description, for Horse or Steam. Coal Kiln Castings, Heavy and Light Castings of every variety.

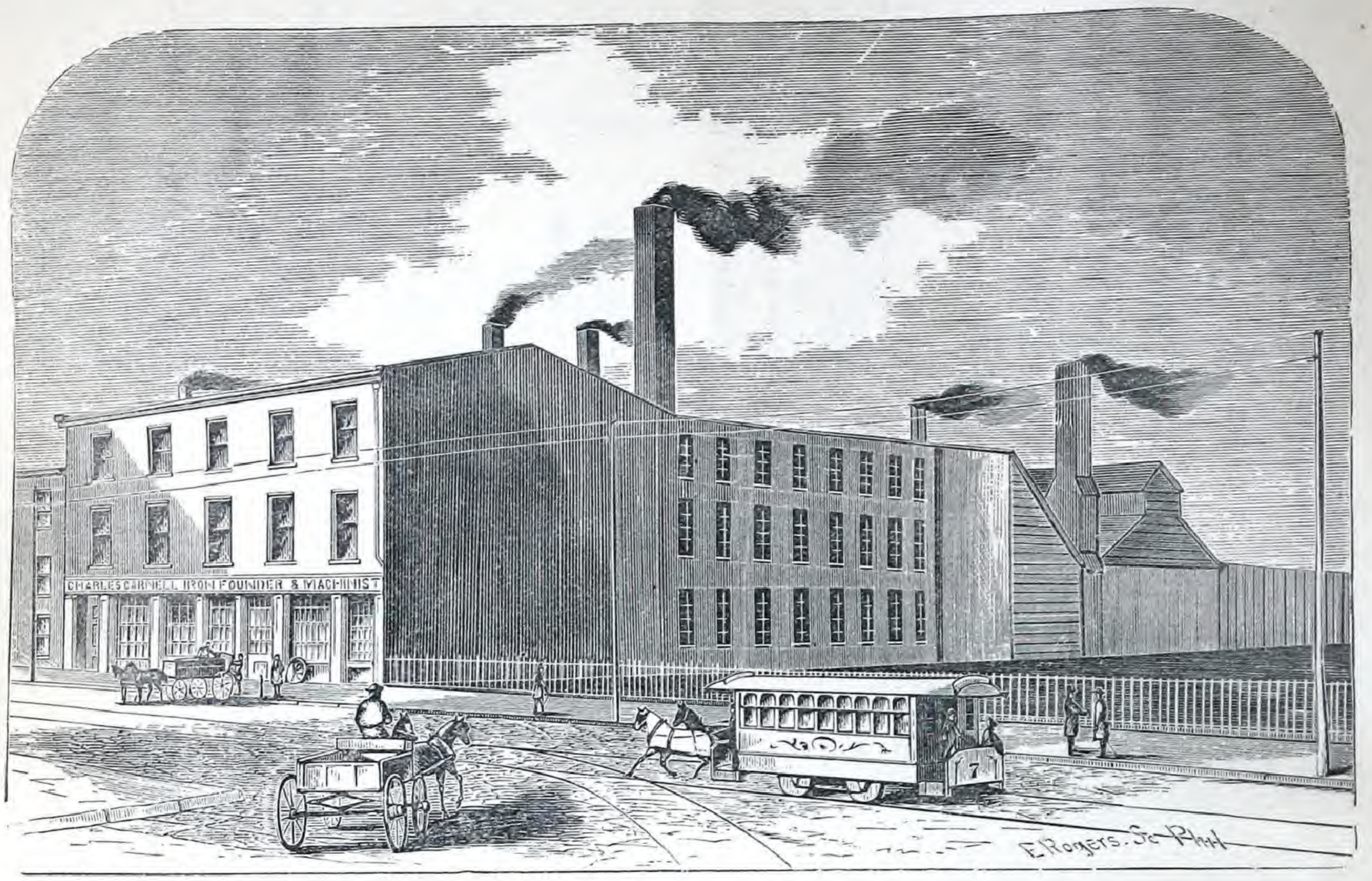
F. L. & D. R. CARNELL,

(Successors to CHARLES CARNELL,)

Nos. 1844-46-48-50 Germantown Avenue,

PHILADELPHIA.

Lonabaugh & Son, Plain and Ornamental Printers, 2044 Germantown Avenue, Philadelphia



We beg leave to present to you this Circular containing an outline of the principal Machines manufactured by us We have been engaged in manufacturing Brick Machinery as a Special Business for a number of years. Our works cover 50 x 300 feet of ground, and consist of Machine Shop, Foundries, Blacksmith Shops, &c., &c., having room enough to build Machinery of any dimensions. *Further information given at any time, by addressing*

F. L. & D. R. CARNELL,

No. 1844 Germantown Avenue,

PHILADELPHIA.

BRICK MOULDING MACHINES.

We manufacture several styles of what are termed mud Machines, that is machines using soft clay in the moulds, the bricks being placed on a floor to dry. The reason these do not come into general use, is the difficulty of getting the bricks to slip from the moulds without using very coarse sand, which greatly impairs their value, as they have not a good color after being burned. For Fire Bricks where soft clay is used, they answer the purpose very well as most of the bricks are afterwards re-pressed. These Machines may be driven by either horse or steam power.

One of the largest Fire Brick works in this country has been using our mud machines since 1858, and have made the majority of all their Bricks and Furnace Blocks by them. They now have four in use. We build and are agents for several Steam Machines costing from $3,000.00 to $10,000.00 each, some of which are working to great advantage, and it is a mere matter of time when all bricks will be made by machinery. In the last few years, great progress has been made in this direction. There is in this city at present a company turning out daily 150.000 first-class bricks. The company alluded to use at their works, drying cars and ovens built expressly for drying bricks, and are thereby enabled to work during the winter season, and also in wet weather. The utility and advantage of this method of drying has been practically demonstrated, having been in daily operation in various yards for several years. We also manufacture Morand's and other first class machines.

FURNACE BLOCK PRESS.

We manufacture Brick Presses for pressing large Bricks for Furnaces. This press is capable of pressing a brick 22 inches square, and we make them to press the bricks either flat or on the edge, the latter being preferred; nearly all the Fire Brick works of this country use them, where bricks of this size are pressed; some works have as many as five of them in use. We make moulds for this size press of any circle or shape that may be desired.

FIRE BRICK PRESS.---Twelve Inch.

We also manufacture a Press that will press a 12-inch brick, burned size. These are used when the bricks are too large for the regular 9-inch Press, and are much easier worked than a Furnace Block Press, where the bricks are not over twelve inches square. We also make moulds of any circle or shape for this Press.

FIRE BRICK PRESS.---Nine Inch. Regular Size.

This may be seen in almost any Fire Brick Works, it being considered the best, having been in use for many years, and has had many important improvements added to it lately. All the parts can be duplicated and renewed by merely ordering that which is broken or worn. All the wearing parts have bushings, so that the press can be kept in good repair by the parties using them. If desired we insert the letters for their brands in Press moulds. We also make moulds of any circle or shape for this Press.

BRICK PRESS MOULDS.

We have on hand patterns from which nearly five hundred different shapes have been made, such as Square, Circle, Wedge, Arch, Key, Bull Head, Soap, Jamb, Skew, Split, &c. We make moulds of any shape desired and often construct them so that several different circles may be pressed in the same mould.

RED, or FRONT BRICK PRESS.

Used for pressing bricks for fronts of buildings. These Presses have become extensively known all over this country and the West Indies. It is by these presses that the celebrated front bricks of Philadelphia, Baltimore, Wilmington and other first-class front bricks are made. We have a very large number in use. We make three different styles, viz: single and double lever and treadle. A single lever press is so constructed that one lever presses the bricks and also raises them to the top of the moulds; a double lever press has two levers, one to press the brick and the other to raise it to the top; a treadle press is the same as a double lever press, except that it has a treadle which is worked by the foot to lift the brick to the top. The single lever press is in most all cases preferred. We make the press moulds of any size under 9¼ inches long; that most generally used is 8¾ by 4⅜. The thickness of the brick can be regulated at will, by placing washers between the plunger and the plug at the bottom of the plunger.

MODE OF MAKING FRONT BRICKS BY HAND.

In preparing the Bricks to be pressed, great care must be taken. *First.*—That they are moulded without flaw or cracks, and that the moulds are kept well cleaned by the off-bearer, as the accumulation of sand and dirt on the sides, will, if not scraped off, make too much variation in the size of the bricks when they come to be pressed. The moulding is usually done under sheds built expressly for the purpose, and the work given to the best brick makers. These sheds differ from the ordinary hacking sheds for common bricks, in that the roof is made to unlap, to allow the sun and wind to assist in drying, if necessary. As it is important that the bricks dry with great regularity, doors are constructed to protect the sides of the shed in case of too high winds prevailing. These doors are placed on that side of the shed where the bricks are drying too fast. In many cases it is found necessary in order to keep the bricks from drying too quickly, to cover them with pieces of carpet, and sprinkle the carpet with water occasionally. When the bricks have dried sufficiently, they are placed on barrows, and taken to the presser in a shed adjoining, and parallel to the one under which they have been moulded. It is also important that care be taken in bringing the bricks to the press, and by the presser in placing them in the press-mould, that the sides of the bricks are not marked by the fingers, it being impossible to press such marks out. The presser should provide himself with a sharp-pointed hard wood stick, with which to clean the dirt from the corners of the press. This should be done every few bricks, and the top and bottom of the press-mould wiped. Occasionally it will be found necessary to raise the bottom plate and scrape the dirt from around the sides; after cleaning, apply a few drops of oil. From the press the bricks are usually placed in piles, on top of one another, from five to seven high, flat. As the bricks dry after being pressed, they are rubbed with the hand and pigeon-hacked between the piles, space being left for that purpose. By pigeon-hacking is meant placing the bricks two on two, and reversing them every course, thereby allowing a large space resembling a pigeon-hole, to facilitate the further drying. After they have become hard or dry enough to handle without any danger of injuring them, they are placed on barrows with soft carpet or cloths between each course, to be hacked in sheds, from which they are removed to the kilns. In order to obtain first-class press bricks it is necessary:—First, to have them well-made; Second, dried properly; Third, pressed and handled carefully.

HAND MOULDS.

We also manufacture Brick Moulds of Wood, Iron or Steel, either single, double or with any number of bricks to one mould. In various parts of the country they differ in style. We have a number of patterns on hand of different sizes and shapes for cast-iron moulds. Sizes that are extensively used, we keep on hand at all times.

CLAY TEMPERING WHEELS.

These are used for tempering clay in yards where the bricks are made by hand. We have in use a large number in various parts of the country and the West Indies. Our wheels are dished to suit the circle of the pit, are all double riveted and have a bushing in them which can be readily replaced at any time, making a great improvement in the wheels. The pit for a regular size wheel should be 28 feet in diameter, with an island or centre 8 feet in diameter. The pit should be 18 to 24 inches deep. The centre post should be planted firmly in the ground, and of such a heighth that when the wheel is in place the shaft will be level. The bottom of the pit should be planked, sawed wedge-shape, in order to form the circle, so that the wheel will always run across the grain of the wood. By using them in this manner they will wear more regular.

STEAM TEMPERING WHEELS.

We make all the necessary gearing for driving clay wheels by steam, either under ground, over head, and various other methods. The underground rigging, is where all the gearing is under ground, making a good solid bearing, and being also out of the way. No extra strong sheds are required. We furnish engine and all complete when it is desired. Some of our gearing has been running for years and gives entire satisfaction.

STAMPING MACHINES.

Stamping Machines are for crushing Fire Brick, etc. for cement. This is a very good machine for that purpose, there being less wear than with any other. It is driven with Steam Gearing.

DRYERS.

We are agents for J. K. Caldwell's Patent Dryers for Drying Bricks, Whiting, &c. It has been used by many parties for several years, with general satisfaction. ☞ See page 7.

PIPE MACHINES.

These machines are for making Terra Cotta Pipe. We make several styles and of any size to suit the purchaser. We have on hand patterns for dies of all sizes. Also Patent Dies for making the Pipe and putting on the collar.

TILE MACHINES.

There are many different styles of Tile Machines, both single and double, and can be worked by either hand or steam power. By double, we mean those machines having a die at each end. These machines make Tile from 1½ to 6 inches diameter.

GRINDING PANS.

We make several styles of Grinding Pans or Chasers, for crushing hard rock clay, with either iron or wood frames, or any or all the castings of any style the purchaser may desire.

CRUCIBLES.

We have a very good machine for making Crucibles, which has given satisfaction for several years.

POTTERY FLOWER POTS, etc.

The same machine used in making crucibles, can be used to great advantage in making Flower Pots, &c.

ROLLERS.

Rollers are used in the manufacture of bricks, for the purpose of crushing the clay and stones, and assists greatly in preparing it for the machine. They are made of different sizes, and are sometimes used double. They are arranged to run at different speeds, thereby grinding, as well as crushing the clay, and also preventing it from coming through in sheets or layers.

CLAY SCREENS.

These Machines are used in removing the stones from clay for Potters' use.

ARTIFICIAL STONE.

We have for this purpose machinery for thoroughly grinding and mixing the sand, slag, cement, &c., and presses adapted to pressing the material into various forms.

PLANES.

We have constantly on hand Planes used for moulding bricks by hand. Also Plane Blades, Handles, &c.

MOULDING BOARD IRONS.

Moulding Board Irons are screwed fast to the table to set the moulds on in moulding bricks by hand. Also, Water Bowl Irons for the water boxes. These we can furnish at any time.

PADDLES.

Used for off-bearing press-bricks from the press.

LUTES.

Are articles used for scraping brick floors.

TRUCKS.

We make different styles, adapted to various purposes, and for handling bricks.

BRICK BARROWS.

We furnish either brick, clay or box barrows.

DIGGING SPADES AND GRUBBING HOES.

For digging and turning clay.

STEAM ENGINES.

We can furnish at any time, Engines of any desired pattern, of our own or other makers. Also, attend to purchasing second-hand engines. Estimates given for any desired form of boilers.

PULLEYS AND SHAFTING.

Having patterns on hand for all the general sizes of Pulleys, we are prepared to furnish them and shafting at short notice. Also, Gear Wheels of any diameter or pitch.

CASTINGS.

Having large foundries we are prepared to furnish castings of any size up to three or four tons in weight, either in sand, dry sand or loam.

MACHINERY.

Having a large machine shop we are prepared to build machinery of any description to order.

COAL KILN CASTINGS.

Coal is fast superceding Wood for burning bricks, as it can be used with more economy and better results. We have for this purpose Grates, Frames and Doors, Plates and Bearing Bars made of special design. The grates are two feet long by twelve inches wide, and weigh from fifty to seventy lbs. according to the style desired. The frames are 14 x 32 inches, and have two doors, one for the fire the other for the ash-pit, weight seventy pounds. There are two sizes of plates: one is narrow and is built in the kiln wall over the arch, the other being of greater width for protecting the doors from the heat. These plates weigh about fifty pounds. The bearing bars are of wrought iron, two of these are used to each grate. There is also four hooks for holding the frame in the wall. When desired, we make the rakes, etc., used in firing. The irons for an arch vary according to the size of kiln. It generally takes fourteen-and-a-half grates, two small and two large plates, two frames and doors, eight hooks and thirty bearing bars. Some arches are constructed with a vacant space in the centre (dead centre) when but four or five grates are used on either side. This plan however does not give satisfaction.

MODE OF SETTING PRESSED BRICKS.

In setting Pressed Bricks for burning, brickmakers aim at placing them in the heart or middle of the kiln, where they attain the best and most regular heat. By referring to the cut on page 10, this idea will be readily seen. The arches are formed by seven straight and six overhanging courses, (fig. 7 and 6,) then ten courses more, (fig. 10) on which is set three rows of pressed bricks, (B.) It will be noticed that these are placed lengthwise on each other, whereas the common quality are set three on three. This is done in order to secure a perfect side, free from fire marks, as is the case with the common bricks. Care must be taken however to allow sufficient space between each row of pressed bricks to form draft. On these three courses of pressed bricks is set a row of common bricks (1) and then another set of pressed in like manner. It is deemed advisable to limit the number of courses to three, as they are apt to roll by shrinkage in burning, if a greater number is set together; the common bricks between prevents this in this method of setting them. In the cut the pressed bricks are represented by the letter **B,** and also the figures **3, 3.** It should be mentioned that it is generally customary to set about four common bricks next to the walls, before beginning with the Pressed. If it is necessary to burn a larger number of pressed bricks in one kiln, than would be contained in six courses, two rows of pressed bricks may be substituted for the one of common. These should be set in like manner and at right angles with those below.

DRYING AND HANDLING BRICKS.

As we take an interest in any good improvement in making or handling Bricks, whereby labor is saved and a better article produced; we take the liberty of most heartily recommending to our numerous customers

Caldwell's System of Drying and Handling Bricks.

The value of this invention to the Brick Maker who makes a brick firm enough to hack three high, or who makes a PRESSED BRICK or FIRE BRICK, can hardly be over-estimated, as the use of the Dryer enables the brick maker to make the same number of bricks each day whether *wet* or *dry*, *cold* or *hot*, unless perhaps a short time in mid-winter, when the thermometer is down to or below zero. This we know to have been done for several winters in this city, by parties using these Dryers. In this city there are several of these Dryers in use, having an aggregate daily drying capacity of over 200,000 bricks.

Important as it is to have a good brick machine to make the bricks, it is equally important to have a better method of drying and handling bricks, than the old method of putting on barrows, wheeling to sheds and putting in hacks, then after long delay, waiting their drying, putting them again on barrows and wheeling to the kiln, thus involving several handlings, more or less damage to angles and corners and exposure to storms, &c.

The use of the Dryer dispenses with all this. It takes up the work where the brick machine or press leaves it, and carries it on through the Dryer and into the kiln.

This is done by simply putting the green bricks from the machine or press, on peculiarly constructed Iron Drying Cars, each of which holds from 500 to 540 bricks. This is done immediately at the machine by the same labor required by the old method to put them on barrows. When the car is full, an empty car is waiting to take its place at the machine. The loaded car is passed on an iron track into the oven, where it remains for nearly twenty-four hours. It is then taken out of the oven at the opposite end to which it entered, and passed on an iron track into the kiln, and the bricks tossed to the setter.

The withdrawal of a car of dry bricks from an oven, makes room for the entry of a car of green bricks at the other end, so that the work of filling and emptying the ovens, goes on simultaneously. Bricks made at a given hour to day, are dried and ready for the setter by the same hour to morrow.

This system of Drying and Handling is very compact, using but little space and dispensing with extensive sheds and floors, and saves all the labor of handling between the machine and kilns.

Parties desiring fuller information can write to us, or address the inventor,

JOHN K. CALDWELL,

No. 1623 North Seventeeth Street,

PHILADELPHIA.

"PEERLESS" BRICK MACHINE,

(Thoroughly Tempering the Clay.)

Weight about Four Tons. **Capacity 20,000 to 30,000 Bricks per day.**

The frame-work and bed-plate of this machine are constructed of iron, and occupy a space of about eight feet square. There is an upright cylinder or pug-mill two feet in diameter and four feet high. This cylinder is cast in sections and bolted together, and has a vertical shaft passing through its centre, provided with a series of knives for cutting and tempering the clay, and forcing or feeding it downward to and below a segmental false bottom secured in the lower part thereof. In the space between the false bottom and the bottom of the pug-mill works a pusher attached to the shaft, the front of said pusher being made convex or curved. This pusher forces the clay from the pug-mill through a die or mouth-piece into moulds, and acts in connection with a pivoted stop, which also works under the false bottom. As the clay is forced by the pusher under the false bottom the stop prevents it from going around, and causes it to pass through the die or mouth-piece into the moulds. By the use of the pusher and stop the clay is forced direct from the pug-mill, obviating the use of any other machinery for that purpose. These parts, also, from their regulation and motion, produce a safety valve at the proper time, enabling any excess of clay fed down by the knives in the pug-mill to be returned for the next charge, thereby avoiding any undue pressure in the moulds.

The moulds are attached to each end of a carriage, which has a reciprocating motion, and stops with each set of moulds at the proper time immediately in front of and flush with the mouth of the die. These moulds have grooves or cuts, through which pass knives placed upon a revolving shaft above, separating and dividing the clay into bricks. The outer end of the moulds has a solid abutment against which the clay is forced sufficiently to press out any flaw, crack or imperfection. After the knives have cut the clay, the carriage is moved, bringing the other set of moulds in front of the die, and while this set is being filled, the others are discharged. The bricks are discharged by the raising of the bottom of the moulds (which are styled followers) on a level with the sides. A sweep or push-bar then removes them on to boards or a stationary table, from which they are taken by a boy and placed on drying cars or barrows. This operation is the same alternately at each end of the machine.

All the motions of the machine are positive and regular, the only belting required being that necessary to transmit the power from the engine. An engine of 20-horse power is sufficient for one machine.

In machines using a pug-mill for tempering purposes, there has been a failure to obtain regularity of feeding. This difficulty is overcome in the "PEERLESS" by the use of the safety-valve previously described, thus securing all the advantages of manufacturing bricks from thoroughly tempered clay.

The clay may be dug in winter and exposed to the action of the weather, as is generally done in making bricks by hand, or taken direct from the bank. A sufficient qauntity of water is conducted to the clay in the pug-mill to assist in thoroughly tempering it, before it is forced into the moulds.

The bricks when discharged from the moulds, are compact and of such consistency as to be handled without marking or injury.

In estimating the cost of making bricks by this machine, (which is less than one-half by the old method,) it is only necessary to say that the labor alone required is to bring the clay to the machine and take the bricks therefrom.

Where drying cars are used, the bricks are placed direct thereon at the machine, and are not again handled until delivered at the kiln; so that the expense of handling is very greatly diminished.

The bricks made by this machine are "perfect bricks," and will bear the closest examination. They may be cut the same as those made by hand, and in appearance compare favorably with the justly celebrated Philadelphia and Baltimore bricks They are admirably adapted for all building purposes, having good angles and of UNIFORM SIZE.

For simplicity of construction, durability, strength, regular movement, and non-liability of derangement of parts, this machine is "PEERLESS," and a marvel of mechanical skill.

We recommend, in connection with this machine, the use of crushing rollers, by means of which all lumps of clay and small stones are pulverized, and larger stones are thrown out.

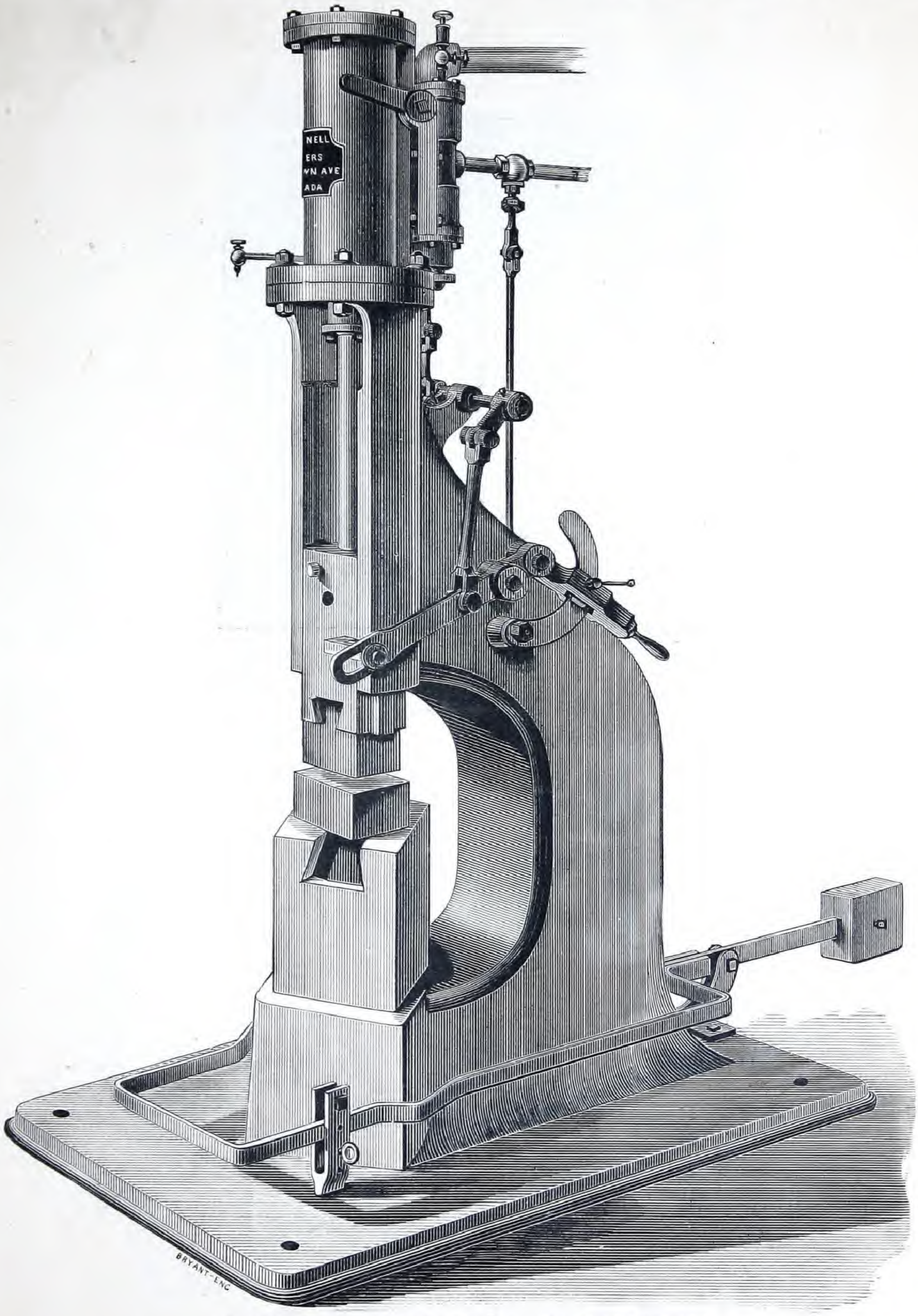
The price of the machine, with the right to use, is $3,500, exclusive of crushing rollers. Machines of larger size and capacity, ranging from 25,000 to 35,000 bricks per day, built to order.

For all information regarding machines, rights, &c., apply to or address,

W. H. MELCHER,
No. 1506 North Seventh Street.
JOSEPH WOOD.
Office American District Telepraph Co., N. E. cor. Third and Dock Streets.
F. L. & D. R. CARNELL,
No. 1844 Germantown Avenue,
Philadelphia, Pa.

P. S.—Sample bricks may be seen at either of the above-named places.

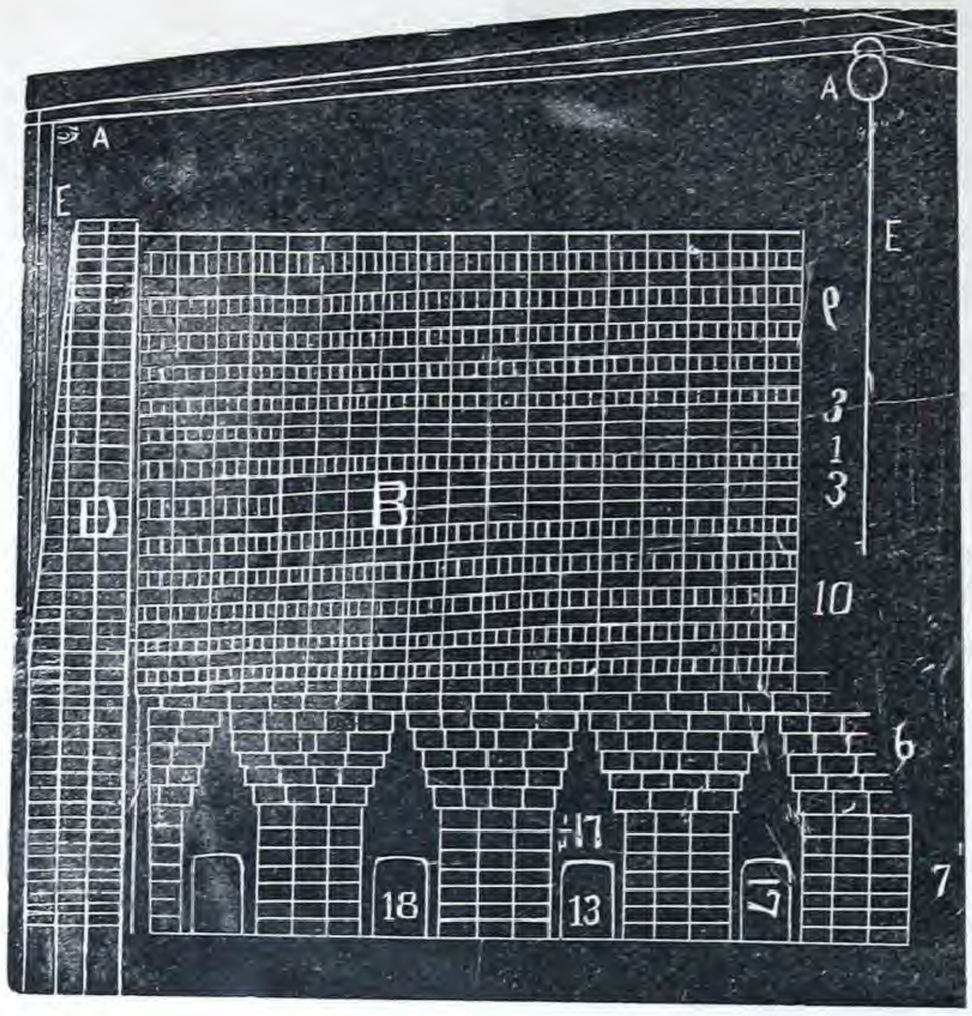
IMPROVED STEAM HAMMERS.



200 lbs. STEAM HAMMER.

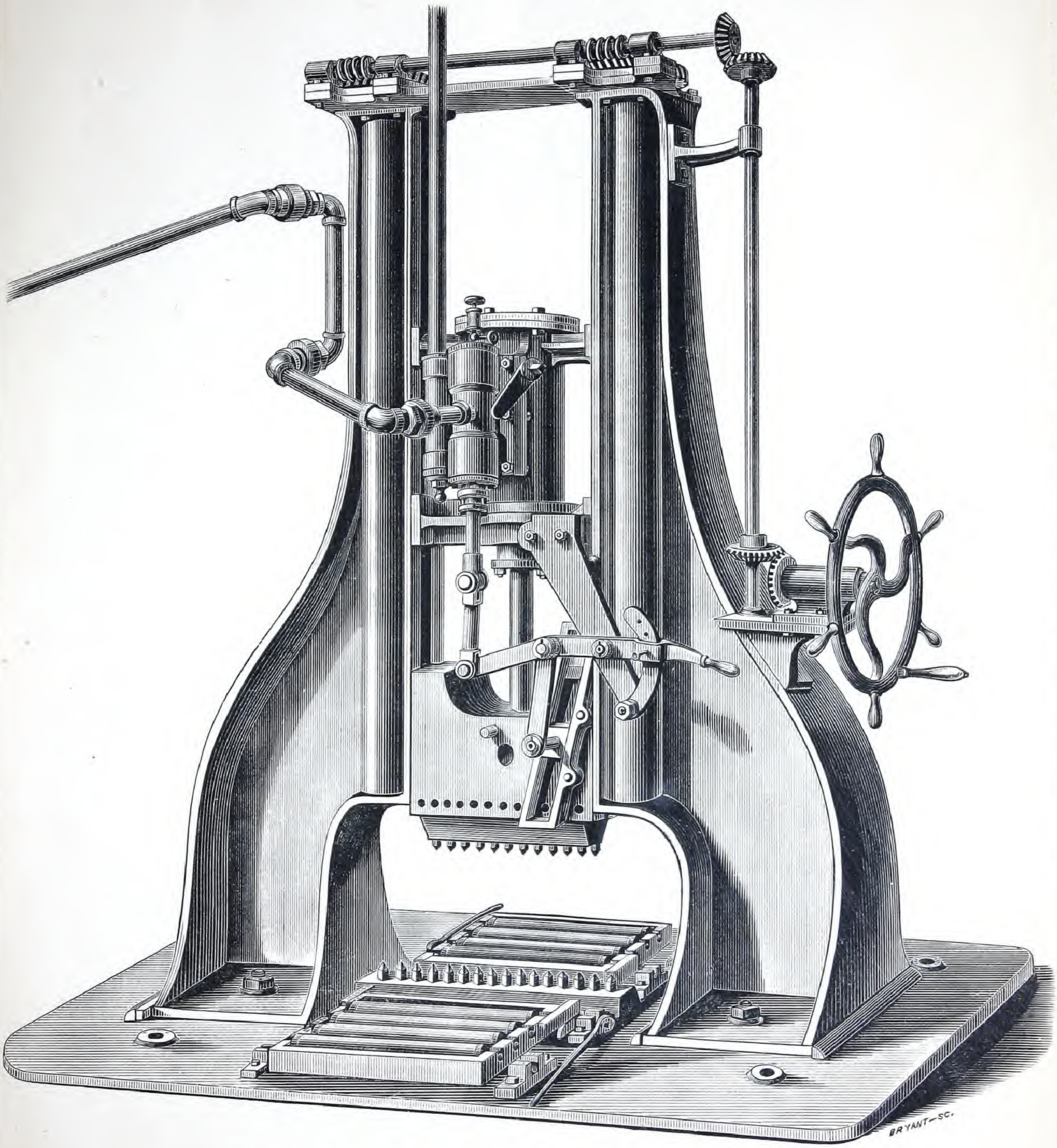
Bore 5 inches. Stroke 12 inches. Suitable for forging Files and other light Iron and Steel Work

We claim to have the most simple Steam Hammer in use. Our improved balance valve is very simple and not liable to get out of order. The Steam Chest is separate from the cylinder, and by having an extra chest on hand, it may be replaced in a few minutes. The Stroke is regulated by the hand lever. The blow may be regulated to suit by the valve near the top of the cylinder. The speed is regulated by the foot treadle. *Parties will please examine our Hammers before purchasing elsewhere.*



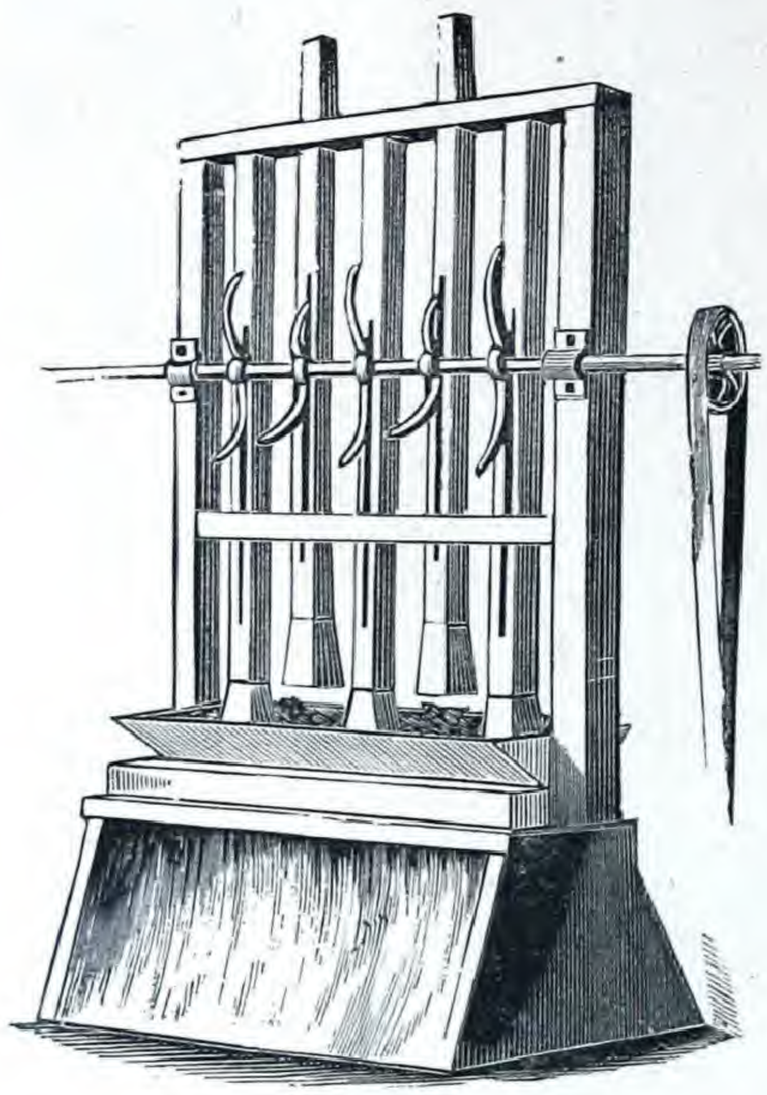
Coal Kiln Casting.

Brick Truck.



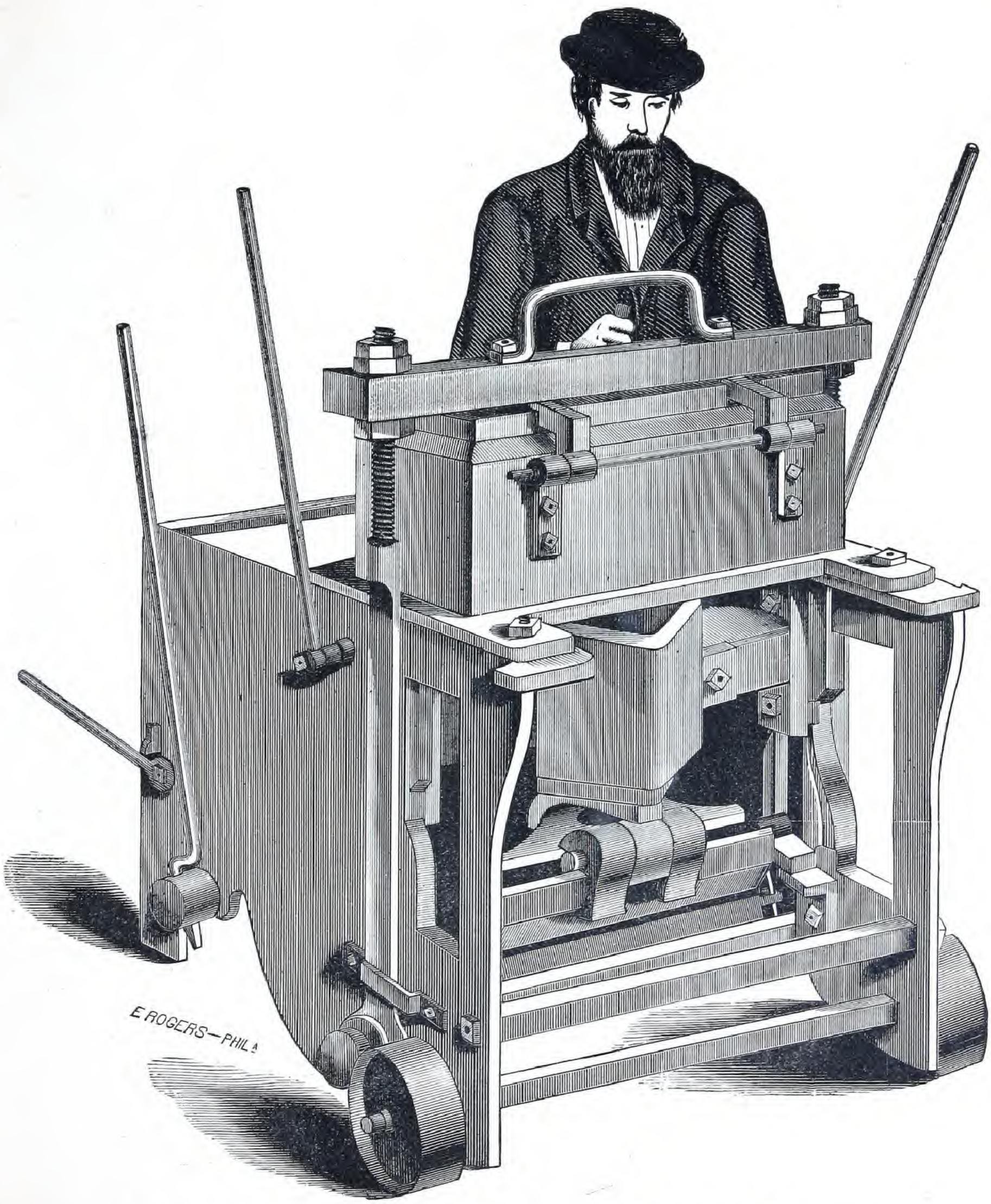
Brookes' Stone Splitting Machine.

This Machine consists essentially of short square shaped bars of Steel, which are beveled off at the ends that are to be exposed on all four sides equally, so as to meet and form a point. The angle they are thus beveled off to, varies according to the nature of the rock to be split. These teeth are fitted in jaws in such a manner that the point of an upper one shall be exactly over and in line with that of a corresponding lower one, and these jaws fitted to a Steam Hammer actuated so as to meet on the block of Stone to be split, by the sudden shock weakens and disintegrates the stone in the line of the teeth, and by the use of this machine Belgian Blocks can be made for less than one half the cost of those made by hand.

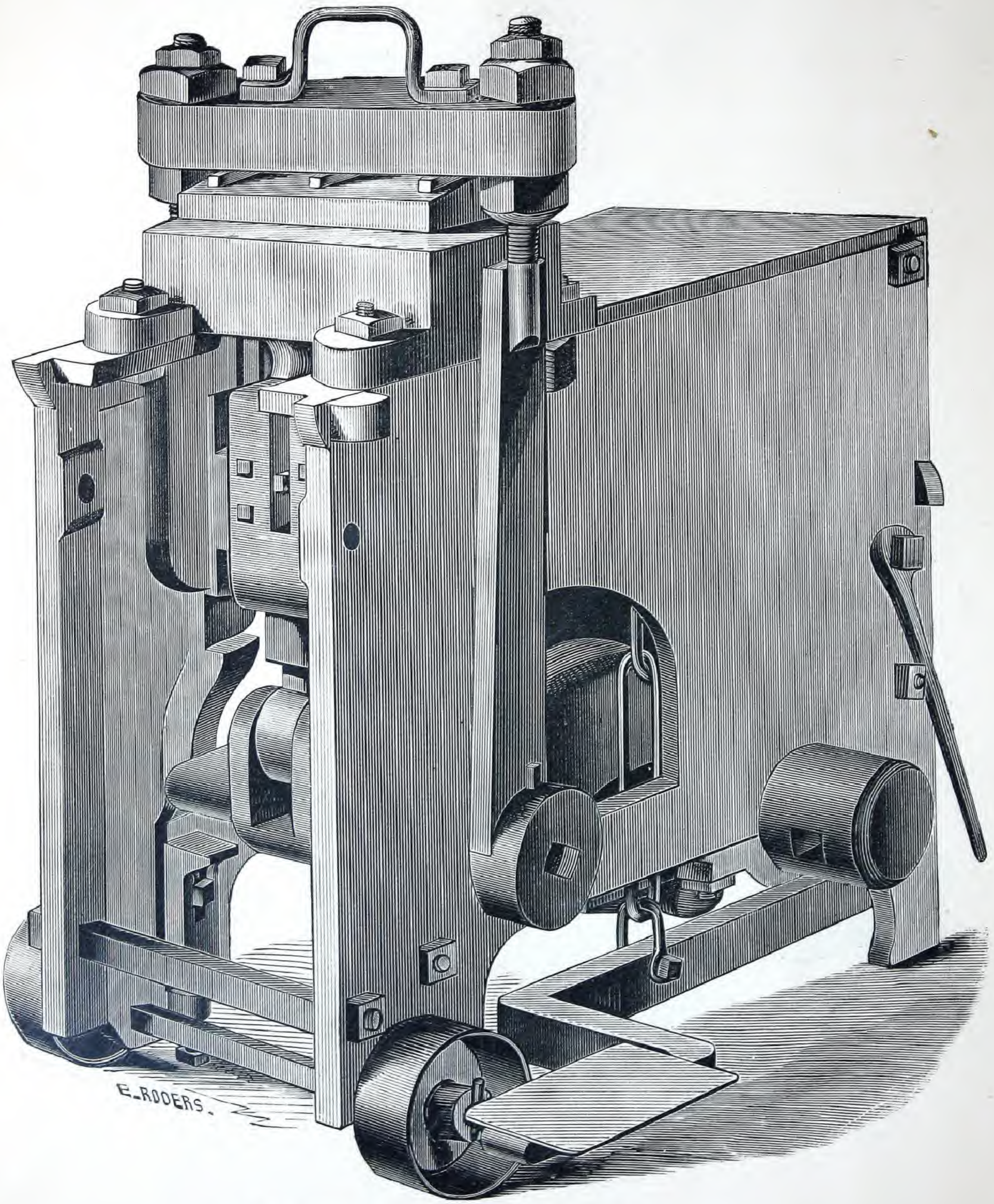


Stamping Machine.

Tile Machine.

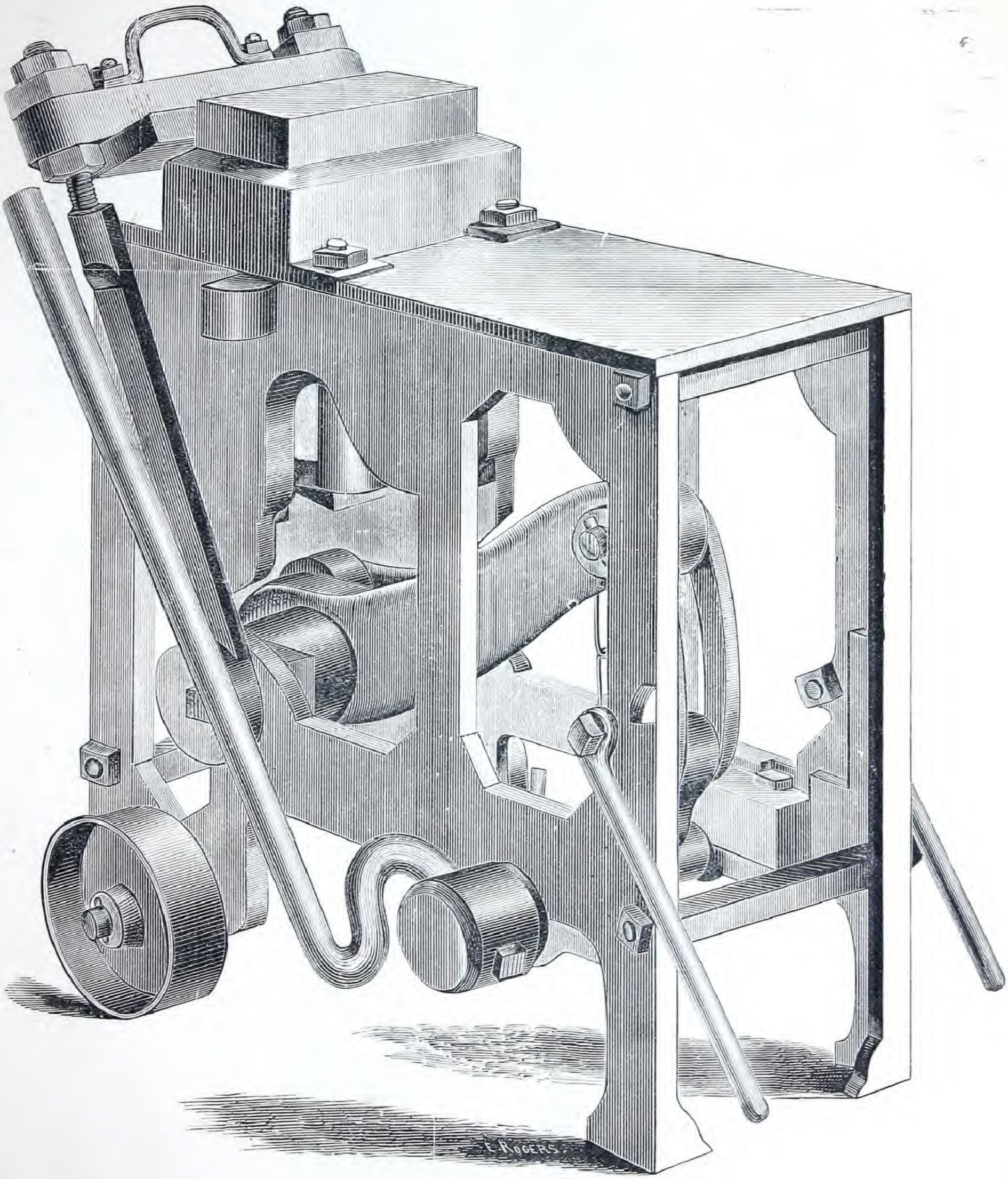


15 to 24 inch Furnace Block Press.



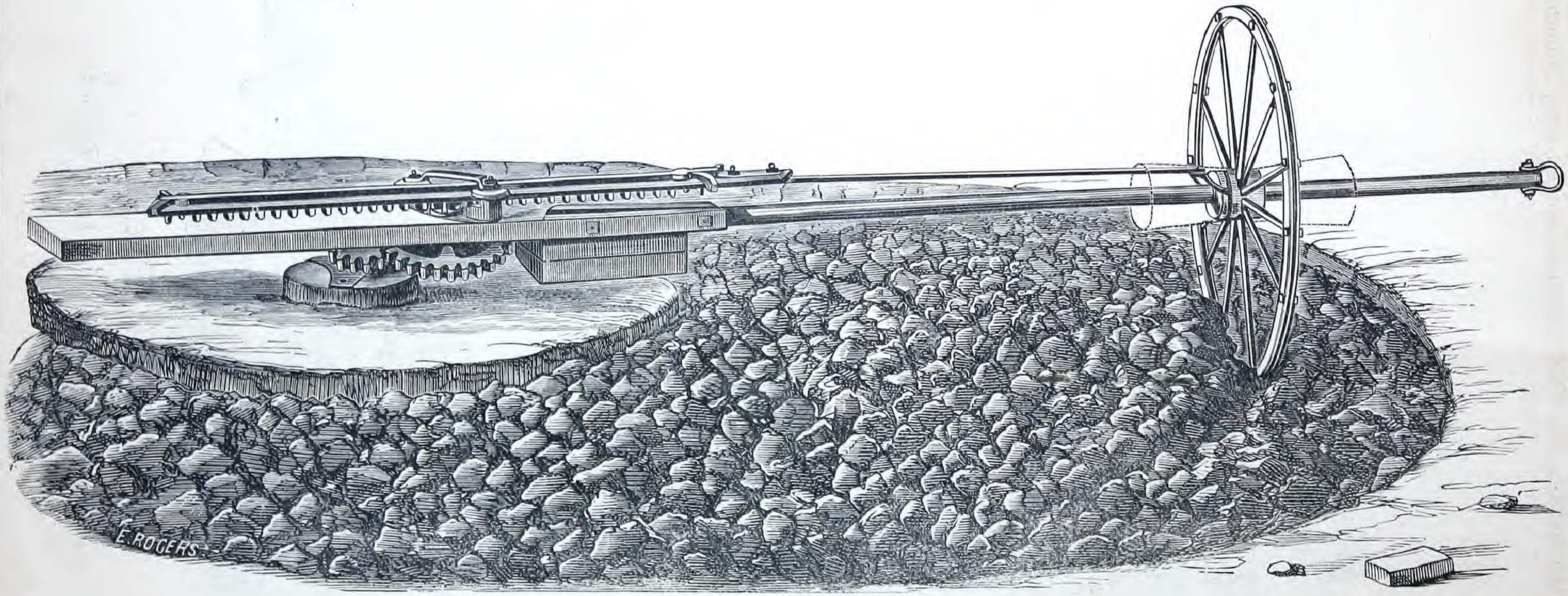
9-inch Fire-Brick Press.

Any shaped Moulds:—Arch, Wedge, Bull Head, Key, Soap, Jamb, etc., can be used on this Press.

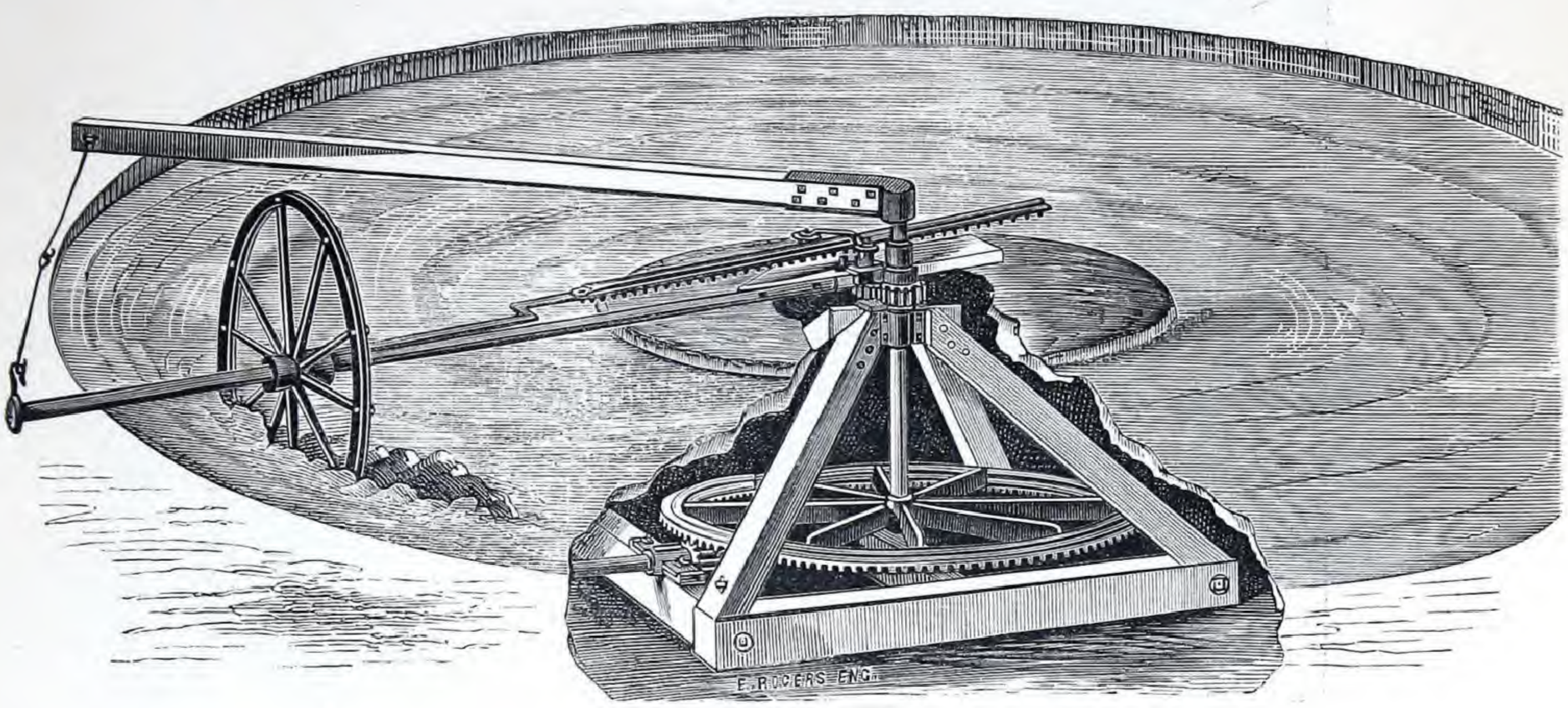


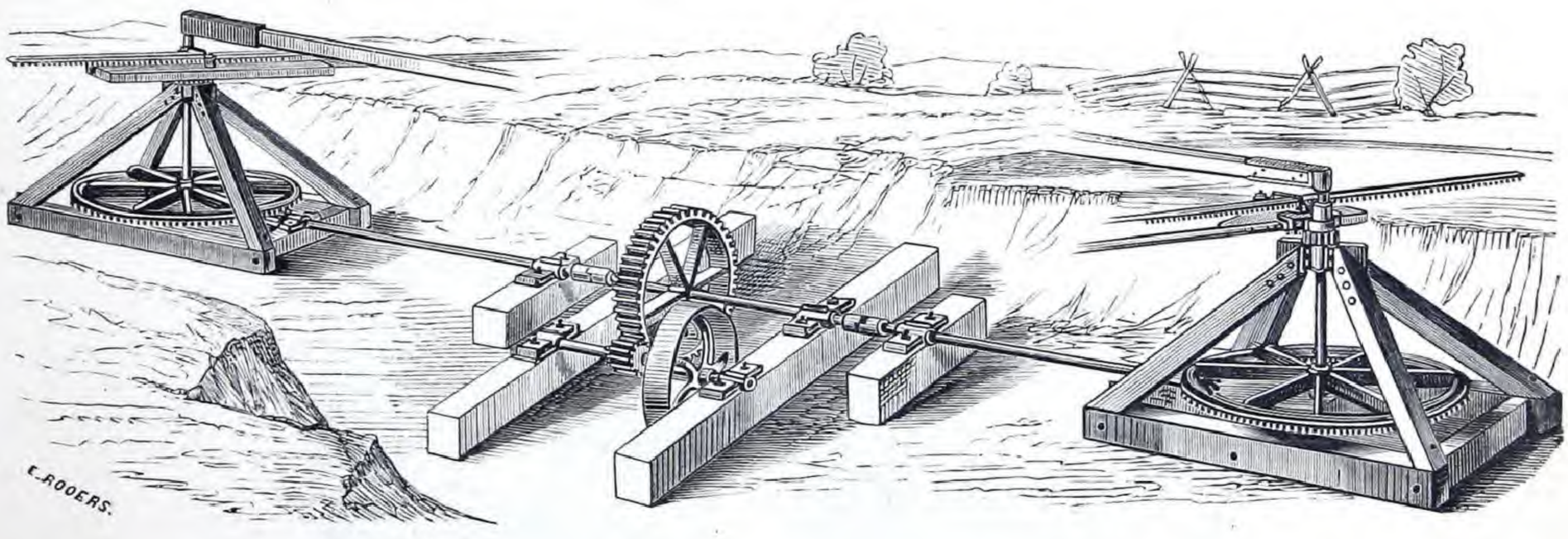
Red Brick Press.

We make either Single or Double Lever Presses.

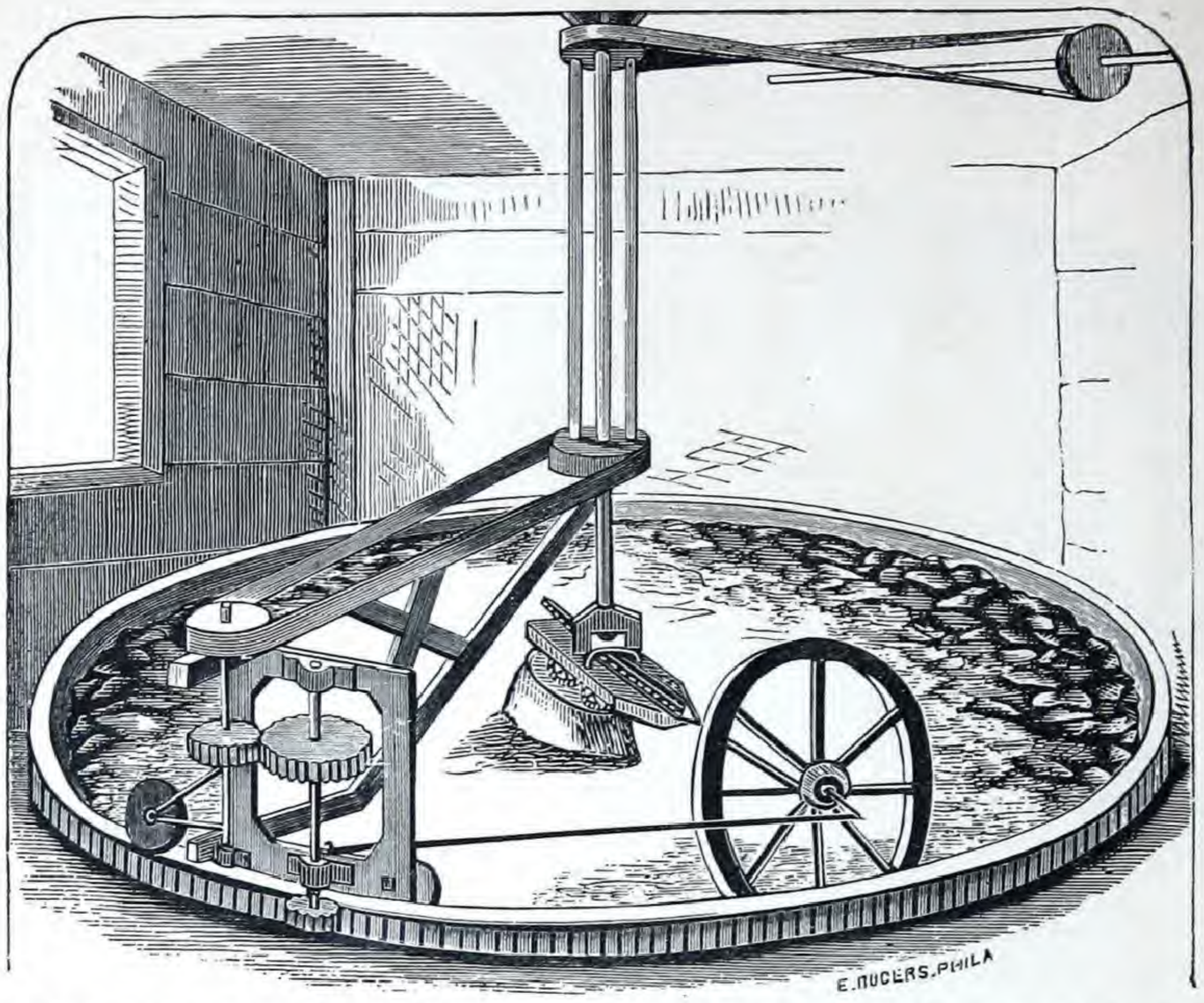


Clay Tempering Wheel.

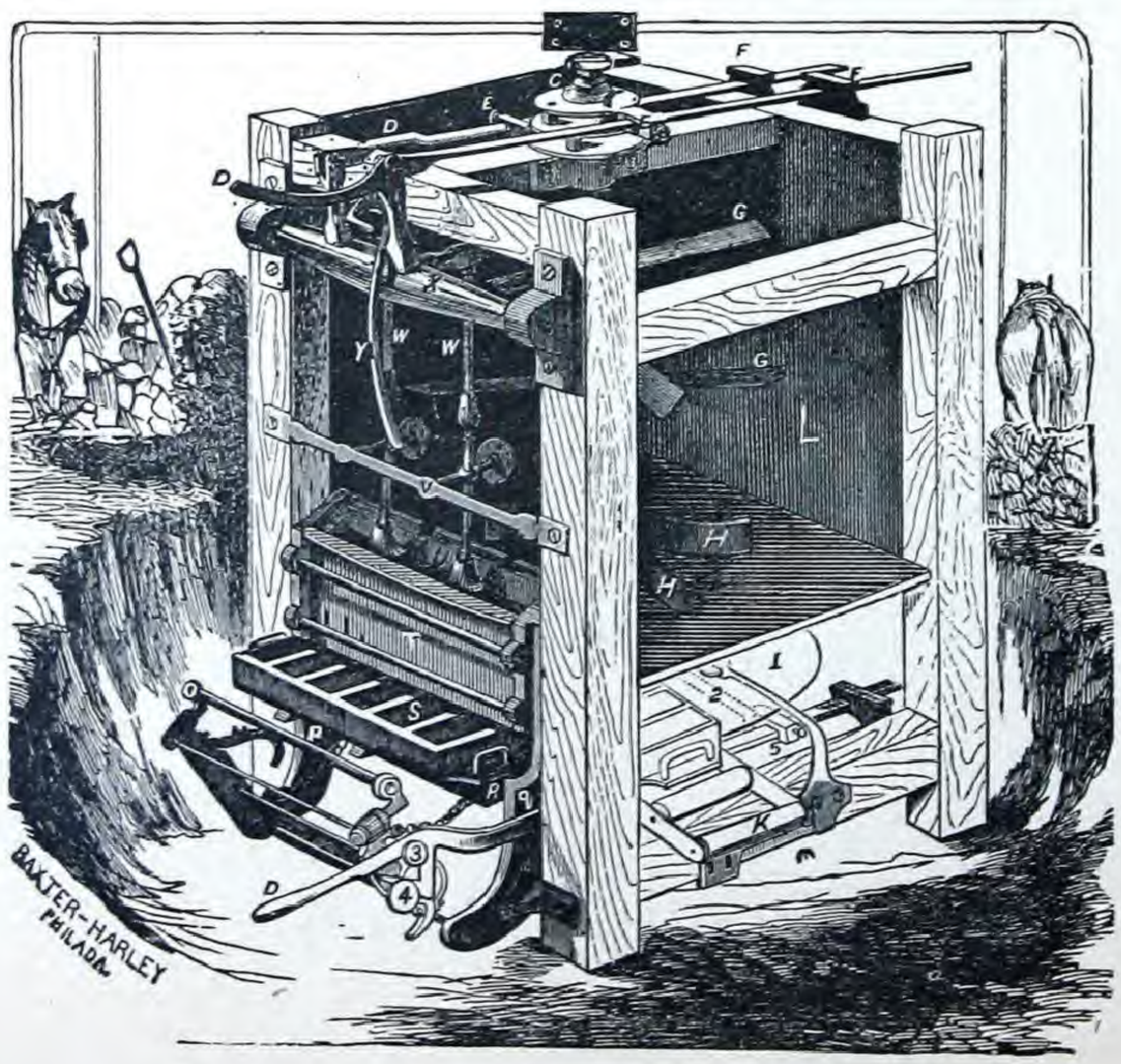




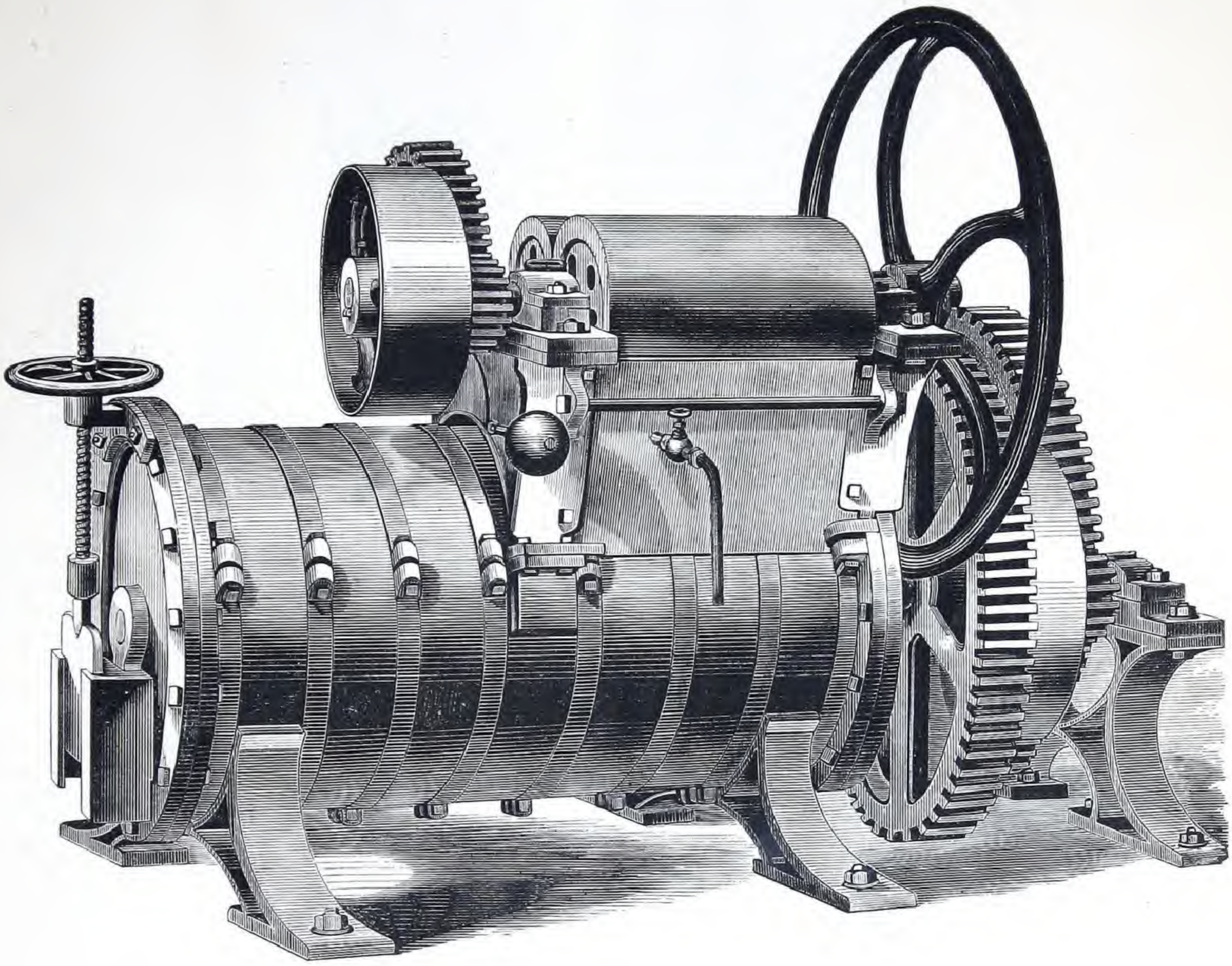
Under-ground Gearing for driving Tempering Wheels by Steam.



Custard & Roberts Patent Gearing.



Fire Brick Machine.

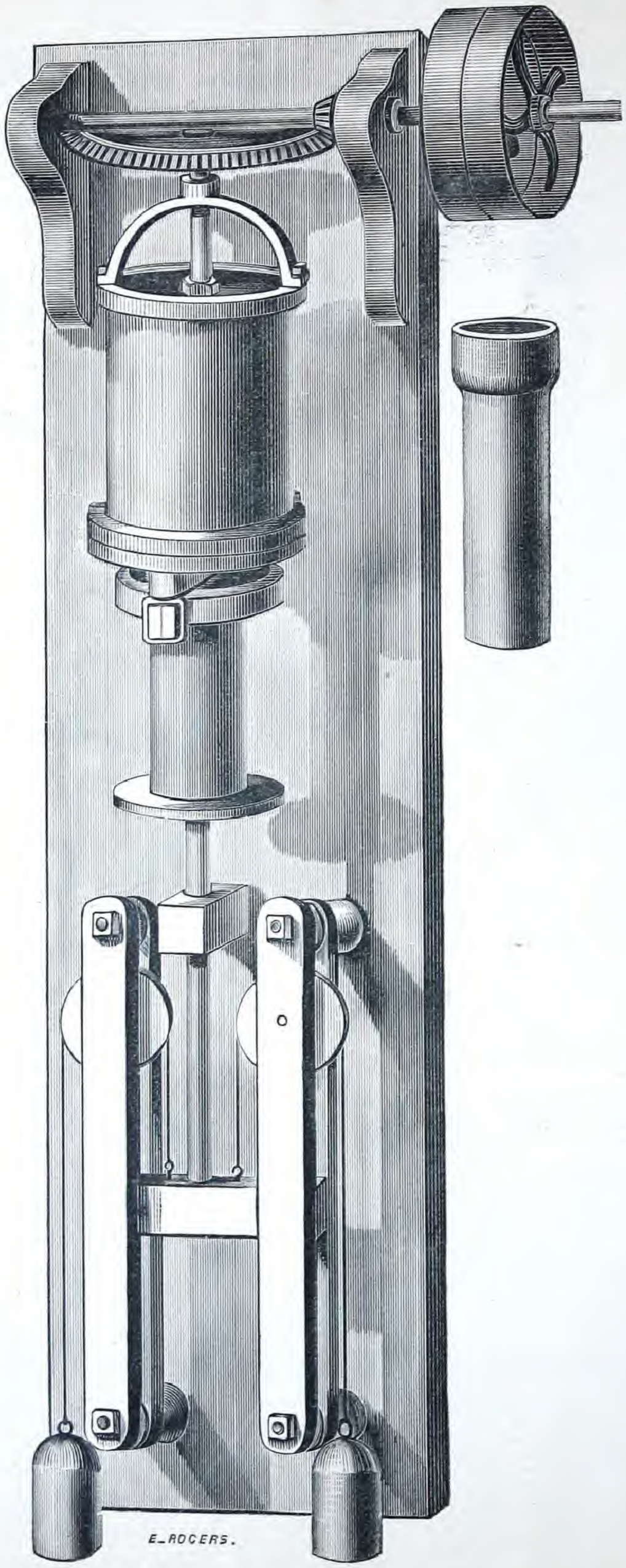


Horizontal Hopper or Pug Mill with Rollers attached, for Crushing and Tempering Clay.

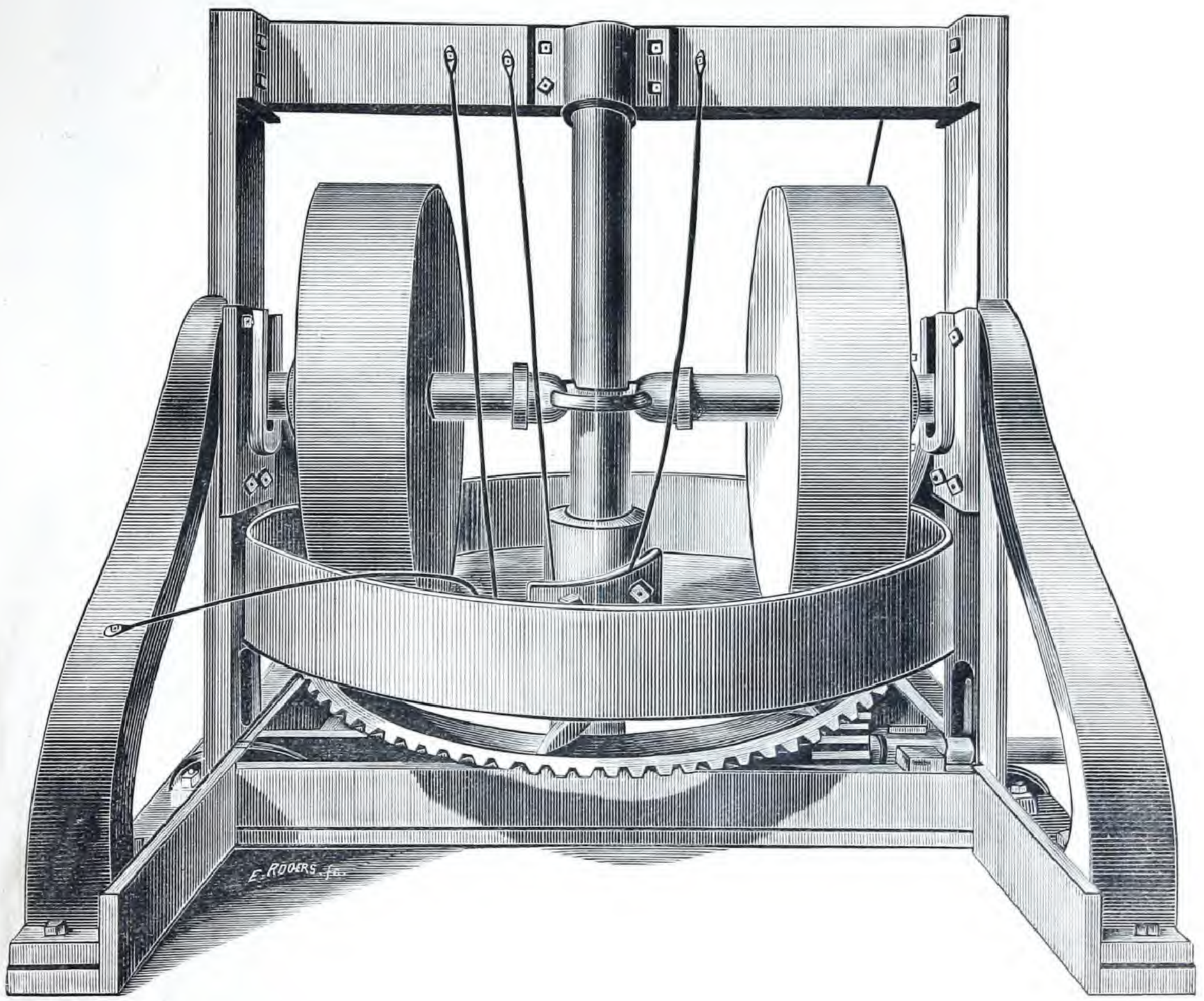
The improvements on this Machine, are: That the rear end is elevated about twelve inches; the cog wheels are removed, and it is driven by worm gearing; the rollers are placed at right angles instead of parallel with the machine, making it very simple.

PUG MILLS OR HOPPERS.

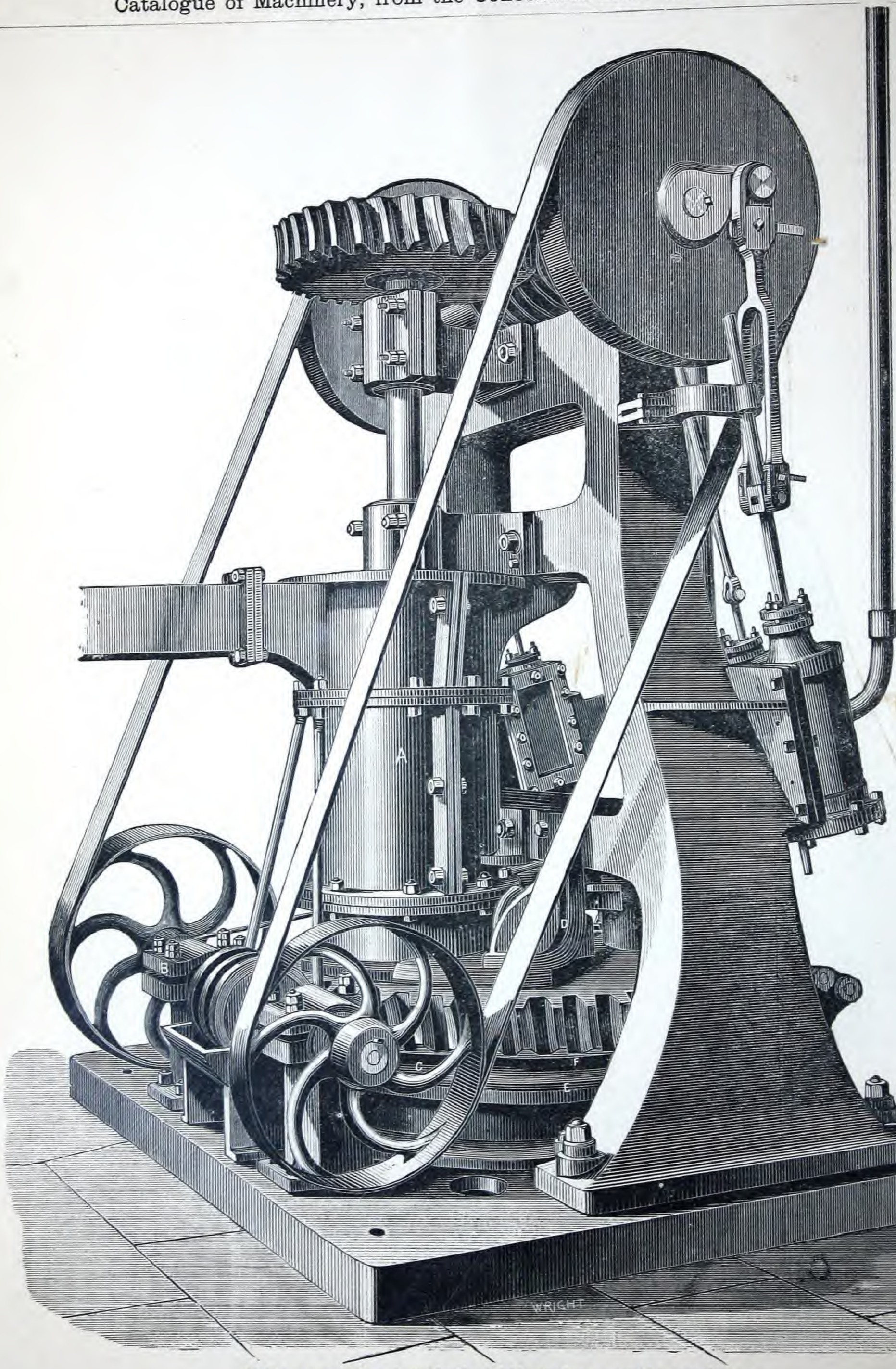
Pug Mills or Hoppers of all styles and sizes, according to the purpose for which they are needed, with either cast-iron or wood frame. Also, a very good horizontal hopper, with a set of rollers attached for crushing the clay before it enters the pug mill, thereby dispensing with the previous soaking of the clay, the rollers crushing all the lumps. This pug mill or hopper is particularly adapted to brick machines that use tempered clay, as it thoroughly prepares it for the machine. This style of machine has been in use for some time, and gives perfect satisfaction.



Pipe Machines of various designs.



Iron Frame Grinding Pan, for Grinding Hard Clay.



Morand's Brick Making Machine.

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